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Intervention helps reduce homophobia

A problem with interventions that use role-playing to beat prejudice is that bigots usually aren't motivated to take the perspective of the groups that they discriminate against. In a new study, Gordon Hodson and colleagues have tested the effectiveness of an unusual alien-themed intervention for reducing homophobia that involves participants taking the perspective of a homosexual person, without really realising that that is what they're doing. Hodson's team tested the homophobic tendencies of 101 heterosexual students and then had 79 of them complete the so-called "Alien-Nation" simulation, whilst the remainder acted as controls and attended a lecture on homophobia. For the Alien-Nation task, the students formed groups of four to five members and imagined landing on an alien planet that's populated by aliens who look exactly like humans, but who don't allow any public displays of affection, and live in same-sex housing and reproduce by artificial insemination.

The participants answered questions about how they would cope with life on the planet and maintain their lifestyles. They also shared plans for how to behave romantically in secret and how to identify other humans. Research assistants then asked the participants whether the situation applied to any real-life groups. The participants failed to recognise the parallel with homosexuality, but the research assistants pointed out the comparison and drew attention to ways that people who are homosexual deal with the constraints of an intolerant society.

A re-test of the participants' attitudes towards homosexuality showed that those in the Alien-Nation group were more able to take the perspective of homosexuals, than were the control participants, and this in turn was associated with more empathy towards people who are homosexual, a greater tendency to think of homosexuals and heterosexuals as all belonging to the same category (being human) and ultimately to more positive attitudes towards people who are homosexual. The Alien condition participants' attitudes also remained more positive compared with controls at one week follow-up.

"The Alien-Nation simulation is easily administered, requires no extensive training, and reduces prejudice," the researchers said.

The intervention used in this study is reminiscent of a prize-winning educational DVD called "Homoworld" that was created by the British psychologists Neil Rees and Catherine Butler in 2008. The film depicts a heterosexual couple as they struggle to live in a world dominated by homosexuality.


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Logic and language are not the same thing

It's difficult for us to imagine what our mental lives would be like without language. Some theorists have even gone so far as to argue that language and logical thought are one and the same thing. A new brain imaging study challenges this notion by showing that logical inferences based on simple "not", "or", "if", "then" terms activate a separate, though overlapping, network of brain regions compared with logical inferences based on grammatical judgements.

Martin Monti and colleagues scanned the brains of fifteen participants while they judged the accuracy of conclusions flowing from two kinds of logical argument. One kind was a more pure form of logic, such as "If both X and Z then not Y", whilst the other kind was based on grammatical rules, such as "It was X that Y saw Z take". The two types of inference were intended to be of comparable difficulty and to be equally valid (or invalid) but crucially only the grammatical version involved the interpretation of language-related roles such as "object" and "subject".

As expected, inferences drawn from the grammar-based logic activated a swathe of brain regions usually associated with language functioning, including the Wernicke-Broca circuit, as well as other regions associated with working memory and executive functioning. Judgements about the purer logical arguments also activated regions associated with memory and mental effort, but did not activate the core language areas of the brain. Instead, the grammar-free logical problems triggered activity in prefrontal regions previously associated with logical reasoning.

Monti's team said their findings were hard to reconcile "with the claim that language and logic are a unitary phenomenon". Rather, they argued their results are consistent with language and logic being separate processes. The grammar-based statements appeared to be solvable using language networks of the brain, whilst purer logic was dealt with by a distinct neural network not dependent on language. The researchers concluded that their work supports earlier findings by others. For example, it's been shown that it is possible to have numerical concepts without the words for those concepts. The new and old findings together show that "much of thought is not embedded in language", they said.


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The surprising links between anger and time perception

The way we think about abstract concepts like time is grounded in physical metaphors. For example, we talk about re-arranged events being moved from one day to another, as if through space. Similarly, there is a metaphorical, embodied aspect to our emotions - fear is associated with physical withdrawal, for example, whilst anger is associated with approach and confrontation. An intriguing new study shows that this shared way of thinking about time and emotion can lead to some surprising effects.

David Hauser and colleagues first showed that people with an angrier temperament are more likely to think of themselves as moving through time, than to think of time as moving towards them. You can test this on yourself by considering which day of the week a meeting has changed to, if it was originally planned for Wednesday but has been moved forward two days. If you think it's now changed to Friday, then you're someone who thinks of themselves as moving through time, whilst if you think the meeting is now on Monday, then you're more passive, and you think about time passing you by.

In a second study, Hauser's team asked student participants a version of this question but they made it so the re-arranged event was either anger-provoking or neutral. On average, more students presented with the angry version said the event had been moved to Friday (as if they themselves were moving through time) than students presented with the neutral version. Moreover, the angry-version students were more likely (than the neutral students) to say that they felt as though they were approaching the event, rather than that the event was approaching them. In other words, it seems that angry thoughts can change the way we think about time.

A final study turned this on its head and showed that thinking about moving through time can induce anger. The researchers presented students with a computer screen flat on a desk, facing the ceiling. On it were the days of the week, in a vertical line with Saturday at the top, then Friday, Thursday, all the way down to Sunday at the bottom, nearest the participant. Commands were given that either provoked thoughts about moving through time, away from the participant (e.g. a meeting has moved forward two days from Sunday to Wednesday - please highlight the new day on the screen), or thoughts about time moving towards the participant (e.g. a shift down the screen, towards the participant from Wednesday to Sunday). Participants primed to think about their movement through time subsequently rated themselves as feeling angrier than participants in the "time moving towards them" condition.

"These studies support theories of embodied cognition by showing that abstract concepts that share a perceptual domain can influence each other in a novel but predictable manner," the researchers said.


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Listener’s facial expression alters speaker’s language

Audiences differ. Talk to one person and your words are welcomed by a smile and nod of acknowledgment. Speak to another, less winsome listener and your words are confronted by a frown and folded arms. According to Camiel Beukeboom, these different responses systematically alter your use of language. Speak to a positive listener and you'll likely use more abstractions and subjective impressions, whilst if you talk to a negative listener you'll probably find yourself sheltering in the security of objective facts and concrete details.

Beukeboom had 57 undergrad students watch an eight minute film about a kiosk owner, and then asked them to take their time and describe the film as fully as possible to two other participants. In actuality, these listeners were research assistants and for half the participants they assumed a positive listening style - smiling, nodding and maintaining an open bodily position - whilst for the other participants they assumed a negative listening style - frowning and unsmiling.

Participants describing the film to positive listeners used more abstractions, describing aspects of the film that can't be seen, such as a character's thoughts and emotions, and also included more of their own opinions. Beukeboom said this is because we interpret the smiles and nods of a positive listener as a sign of agreement and understanding, encouraging us to provide a more interpretative account. By contrast, negative listeners provoke in the speaker a more cautious and descriptive thinking style.

"Consider what this means," Beukeboom said. "By merely smiling or frowning a listener could influence how a speaker reports information and how it is subsequently remembered, and possibly passed on. In, for instance, witness interrogations, job interviews, politics, or psychotherapy, a simple smile or frown could potentially have a large impact."


Kids with invisible friends have superior narrative skills

The company of an imaginary friend used to be interpreted as a sign of a child's deficient character. Writing in a 1934, for example, M. Svendsen said of those children in his sample with an imaginary friend that "personality difficulties were present in most", with "timidity being most common".

Times have changed. It depends on the precise definition of "imaginary friend", but by some modern estimates, nearly half of all young children have an imaginary companion at some point. Moreover, children with imaginary friends have been found to be just as sociable and popular as those without an imaginary friend. Now Gabriel Trionfi and Elaine Reese have presented some preliminary evidence that having an imaginary friend could even be beneficial, tending to go hand in hand with superior narrative skills. In turn, past research has shown that superior narrative skills tend to predict later reading success and school achievement.

Trionfi and Reese interviewed 48 mothers and their five-and-a-half year-old children (half of whom were girls) about whether the children had an imaginary friend now, or had had one in the past. The key finding is that the 23 children with a past or present imaginary friend performed significantly better on average at a narrative skills task. Whether re-telling a short fictional story ("A perfect father's day") to a puppet, or telling a story about a real experience they'd had in the last year, the children with a past or present imaginary friend tended to use more dialogue, and to provide more information about time, place and causal relations, thus providing richer stories.

The researchers aren't sure exactly how imaginary companions and narrative skills are linked, but one possibility is that children with an unseen companion get practice at telling stories whenever they are asked by parents or others about their invisible friend. Of course another possibility, which the design of the current study can't rule out, is that having better narrative skills somehow makes it more likely that a child will develop an imaginary friend.

The researchers say their evidence is too tentative and preliminary for it to be advisable to encourage children to develop an imaginary friend. "Rather, if a child has already created an imaginary companion, parents and teachers could allow this play to flourish."


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Gentlemen, caution: interacting with a lady could impair your cognitive faculties

It's a scenario that's repeated up and down the land. The man knows he is supposed to be focused on discussing last month's sales projections, or some other task, but instead finds himself preoccupied by his female colleague. Now Johan Karremans and colleagues have shown that men are left cognitively impaired by such situations, an effect that seems to be related to the diversion of cognitive resources towards the challenge of creating the best possible impression.

Forty male heterosexual undergrads performed a memory test, called the 2-back task, both before and after chatting for seven minutes with a female or male experimenter. The task required them to observe a stream of letters and indicate as fast as possible for each one whether it was the same as the letter that appeared two letters ago. Participants who conversed with a female experimenter showed a deterioration in performance. By contrast, participants who chatted with a male experimenter showed no deterioration. For the participants who chatted with a female, their impairment increased in line with how attractive they perceived the experimenter to be. Participants in a relationship were impaired by talking to a woman just as much as participants who were single.

A second experiment was similar to the first, except female students were also tested. Also, a more demanding task was used (a version of the Simon task, which involved categorising a word if it was printed in white or indicating its colour if it appeared in blue or green). Between tests, participants chatted with another participant, either male or female.

Once again, male participants showed a decline in cognitive performance after chatting for a few minutes with a female. They were slower by an average of about 40ms - a small, but statistically significant impairment. Male participants who said they were more concerned by creating a good impression were the ones who were most impaired. Female participants, by contrast, were unaffected, whether they chatted between tests to a man or woman.

That men, but not women, were affected by a brief mixed-sex encounter is consistent with research in evolutionary psychology (and with received wisdom) showing that men are more motivated by mating goals. For example, men are more likely to look for sexual interest in the behaviour of the opposite sex, and tend to overestimate women's sexual interest. More generally, the current findings tally with research in other contexts showing that impression management can deplete cognitive resources - such as when a racially prejudiced person interacts with a person of different ethnicity.

Karremans' team said their findings could have important real-life implications, for example in relation to whether schooling should be single or mixed-sex. "Part of boys' valuable cognitive resources may be spent on impressing their female class members," they said.

http://dx.doi.org/10.1016/j.jesp.2009.05.004

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A new brain imaging study shows the difference, in terms of brain activity, between a person feigning having a paralysed arm and a patient with conversion paralysis - that is, paralysis with no clinically identifiable neurological cause.

Conversion paralysis is one manifestation of conversion disorder, previously known as hysteria, which was made famous by the nineteenth century French neurologist Jean-Martin Charcot and later, by his students Pierre Janet and Sigmund Freud. The label "conversion" disorder comes from the idea that an emotional complaint is somehow converted into a physical symptom.

In the current study, Yann Cojan and colleagues scanned the brain of a 36-year-old woman with conversion paralysis, as she completed a version of the Go / No Go task. Trials began with a signal telling her which hand to respond with, followed, after a delay, by a green or red signal (Go / No Go), which indicated whether the response should be made or withheld (it was green on 75 per cent of trials).

The woman, divorced with two children, had recently recovered from a physical illness and had suffered a stressful relationship break up. Her complaint was of paralysis in her left hand, despite no identifiable neurological cause. The woman's brain activity during the task was compared with that of several healthy controls, a minority of whom were asked to feign having paralysis in their left hand.

As expected, the researchers found suppressed activity in the right primary motor cortex of the female patient when she attempted to move her "paralysed" hand (you'll remember that the right hemisphere controls the left side of the body). A similar suppression was observed in the controls who were feigning paralysis.

However, unlike in the controls, the researchers also observed in the patient's brain increased connectivity between the right motor cortex and midline structures, including the ventromedial prefrontal cortex and the precuneus, which is found in the parietal lobe. These brain regions have previously been associated with self-monitoring, mental imagery and autobiographical memory, thus raising the intriguing possibility that this anomalous activity could represent the brain basis for emotional interference with motor control.

Two other key findings emerged. The brain region normally associated with consciously inhibiting a prepared response - the inferior frontal gyrus - was not activated when the woman failed to move her "paralysed" hand (but it was activated when the controls feigned paralysis on "Go" trials). Moreover, there was evidence of preparatory motor activity in the woman's brain during Go trials with her "paralysed" hand, thus supporting her claim to be willing a movement to occur.

"Taken together, our results may help better understand the brain pathways by which self-awareness becomes distorted in these patients [with conversion disorder] and how the mind may take control over the body during conversion," the researchers said.


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